

What Is Claimed Is:

1. A motor comprising a rotor core (2)(12)(32)(42) in which multiple permanent magnets (3)(13)(14)(33)(43)(44) are embedded, wherein a peripheral direction edge section of each permanent magnet
5 (3)(13)(14)(33)(43)(44) or non-magnetic layer (4)(34) continuous or adjacent to the peripheral direction edge section of each permanent magnet (3)(13)(14)(33)(43)(44) elongates in the vicinity of between the poles to the vicinity of the rotor surface, and a second non-magnetic layer (5)(35) is provided in the vicinity of the surface of the rotor at the pole center side
10 position with respect to the peripheral direction edge section of each permanent magnet (3)(13)(14)(33)(43)(44) or non-magnetic layer continuous or adjacent to the peripheral direction edge section of each permanent magnet (3)(13)(14)(33)(43)(44), and wherein the non-magnetic layer (4)(34) continuous or adjacent to the peripheral direction edge section of each
15 permanent magnet and the second non-magnetic layer (5)(35) are positioned to cancel n-th order harmonics (n is an odd number and is equal to or greater than 3) of the induction voltage.
2. A motor as set forth in claim 1, wherein the n-th order harmonics is odd number order harmonics, the odd number being equal to or greater than 3
20 and other than multiples of 3.
3. A motor as set forth in claim 2, wherein the n-th order harmonics is odd number order harmonics, the odd number being equal to or greater than 13 and other than multiples of 3.
4. A motor as set forth in claim 2, wherein the n-th order harmonics is 5-th
25 order harmonics or 7-th order harmonics.

5. A motor as set forth in claim 4, wherein the peripheral direction edge section of each permanent magnet (3)(33) or non-magnetic layer (4)(34) continuous or adjacent to the peripheral direction edge section of each permanent magnet and the second non-magnetic layer (5)(35) are made to be
 5 independent from one another, and rotor core (2a)(32a) are interposed between them.

6. A motor as set forth in claim 4 or claim 5, wherein an angle $\theta 1$ between the peripheral direction edge section of each permanent magnet (3) or the pole center side edge section of rotor surface adjacent section of
 10 non-magnetic layer (4) continuous or adjacent to the peripheral direction edge section of each permanent magnet (3) and between poles, and an angle $\theta 2$ between pole center side edge section of the rotor surface adjacent section of the second non-magnetic layer (5) and the between poles, are determined to be

15 $0 < \theta 1 < 180/(5 \cdot Pn)$

and

$$180/(5 \cdot Pn) \leq \theta 2 \leq 180 \times 2/(5 \cdot Pn)$$

or

$$0 < \theta 1 < 180/(7 \cdot Pn)$$

20 and

$$180/(7 \cdot Pn) \leq \theta 2 \leq 180 \times 2/(7 \cdot Pn)$$

where a pole pair number is Pn .

7. A motor as set forth in claim 4 or claim 5, wherein the angle $\theta 1$ is $0 < \theta 1 < 180/(5 \cdot Pn)$ or $0 < \theta 1 < 180/(7 \cdot Pn)$, the angle $\theta 2$ is the minimum value
 25 of $180/(5 \cdot Pn) \leq \theta 2 \leq 180 \times 2/(5 \cdot Pn)$ or the minimum value of $180/(7 \cdot$

$$P_n) \leq \theta_2 \leq 180 \times 2 / (7 \cdot P_n).$$

8. A motor as set forth in claim 4 or claim 5, wherein an angle θ_5 between the peripheral direction edge section of each permanent magnet (33) or the pole center side edge section of the rotor surface adjacent section of the non-magnetic layer (34) continuous or adjacent to the peripheral direction edge section of each permanent magnet (33) and the between poles, and an angle θ_6 between pole center side edge section of the rotor surface adjacent section of the second non-magnetic layer (35) and the between poles, are determined to be

$$0 < \theta_5 < 180 / (5 \cdot P_n)$$

and

$$180 / (5 \cdot P_n) \leq \theta_6 \leq 180 \times 2 / (5 \cdot P_n)$$

where a pole pair number is P_n ,

and the rotor core section width has points of inflection, the rotor core section width being sandwiched by the peripheral direction edge section of each permanent magnet (33) or non-magnetic layer (34) continuous or adjacent to the peripheral direction edge section of each permanent magnet (33) and the second non-magnetic layer (35) and the rotor surface,

angles θ_7 and θ_8 between the respective point of inflection and the between poles are determined to be

$$0 < \theta_7 < 180 / (7 \cdot P_n)$$

and

$$180 / (7 \cdot P_n) \leq \theta_8 \leq 180 \times 2 / (7 \cdot P_n)$$

where a pole pair number is P_n ,

and the relationship of the angles θ_5 , θ_6 , θ_7 and θ_8 is determined to be

$$\theta 7 < \theta 5 < \theta 8 < \theta 6.$$

9. A motor as set forth in claim 4 or claim 5, wherein the angle $\theta 5$ is $0 < \theta 5 < 180/(5 \cdot P_n)$, the angle $\theta 7$ is $0 < \theta 7 < 180/(7 \cdot P_n)$, the angle $\theta 6$ is the minimum value of $180/(5 \cdot P_n) \leq \theta 6 \leq 180 \times 2/(5 \cdot P_n)$, and the angle $\theta 8$ is the minimum value of $180/(7 \cdot P_n) \leq \theta 8 \leq 180 \times 2/(7 \cdot P_n)$.

10. A motor as set forth in one of claim 1 through claim 4, wherein each of the permanent magnet (13)(14)(43)(44) is divided into multiple layers in radial direction.

11. A motor as set forth in claim 10, wherein each of the permanent magnet (13)(14) is divided into two layers in radial direction, and an angle $\theta 3$ between the peripheral direction edge section of permanent magnet (13) in inner side of the rotor or the pole center side edge section of rotor surface adjacent section of non-magnetic layer continuous or adjacent to the peripheral direction edge section of each permanent magnet (13) and the between poles, and an angle $\theta 4$ between the peripheral direction edge section of permanent magnet (14) in outer side of the rotor or pole center side edge section of the rotor surface adjacent section of non-magnetic layer continuous or adjacent to peripheral direction edge section of the permanent magnet (14) and the between poles are determined to be

$$0 < \theta 3 < 180/(5 \cdot P_n)$$

and

$$180/(5 \cdot P_n) \leq \theta 4 \leq 180 \times 2/(5 \cdot P_n)$$

or

$$0 < \theta 3 < 180/(7 \cdot P_n)$$

and

$$180/(7 \cdot P_n) \leq \theta_4 \leq 180 \times 2/(7 \cdot P_n)$$

where a pole pair number is P_n .

12. A motor as set forth in claim 11, wherein the angle θ_3 is $0 < \theta_3 < 180/(5 \cdot P_n)$ or $0 < \theta_3 < 180/(7 \cdot P_n)$, and the angle θ_4 is the minimum value
 5 of $180/(5 \cdot P_n) \leq \theta_4 \leq 180 \times 2/(5 \cdot P_n)$ or the minimum value of $180/(7 \cdot P_n) \leq \theta_4 \leq 180 \times 2/(7 \cdot P_n)$.

13. A motor as set forth in claim 10, wherein each of the permanent magnets (43)(44) is divided into two layers in radial direction, and an angle θ_9 between the pole center side edge section of rotor surface adjacent
 10 section of the permanent magnet (43) in inner side of the rotor and the between poles, and an angle θ_{10} between the pole center side edge section of the rotor surface adjacent section of the permanent magnet (44) in outer side of the rotor and the between poles are determined to be
 $0 < \theta_9 < 180/(5 \cdot P_n)$

15 and

$$180/(5 \cdot P_n) \leq \theta_{10} \leq 180 \times 2/(5 \cdot P_n)$$

where a pole pair number is P_n ,

and the rotor core section width has points of inflection, the rotor core section width being sandwiched by the peripheral direction edge section of
 20 permanent magnet (43) on inner side of the rotor or non-magnetic layer continuous or adjacent to the peripheral direction edge section of permanent magnet (43) and the peripheral direction edge section of permanent magnet (44) on outer side of the rotor or non-magnetic layer continuous or adjacent to the peripheral direction edge section of permanent magnet (44), and
 25 angles θ_{11} and θ_{12} between the respective point of inflection and the

between poles are determined to be

$$0 < \theta_{11} < 180/(7 \cdot P_n)$$

and

$$180/(7 \cdot P_n) \leq \theta_{12} \leq 180 \times 2/(7 \cdot P_n)$$

5 where a pole pair number is P_n ,

and a relationship of the angles θ_9 , θ_{10} , θ_{11} and θ_{12} is determined to be

$$\theta_{11} < \theta_9 < \theta_{12} < \theta_{10}.$$

14. A motor as set forth in claim 13, wherein the angle θ_9 is $0 < \theta_9 < 180/(5 \cdot P_n)$, the angle θ_{11} is $0 < \theta_{11} < 180/(7 \cdot P_n)$, the angle θ_{10} is the
 10 minimum value of $180/(5 \cdot P_n) \leq \theta_{10} \leq 180 \times 2/(5 \cdot P_n)$, and the angle θ_{12} is the minimum value of $180/(7 \cdot P_n) \leq \theta_{12} \leq 180 \times 2/(7 \cdot P_n)$.